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(54) Title: PROCESS FOR MAKING CONTAINER FOR PACKAGE AND CONTAINER FOR PACKAGE OBTAINED THEREFROM, PROCESS FOR FITTING PLASTIC COVER AND BOTTOM INTO METAL BODY CONTAINER FOR PACKAGE AND PROCESS FOR FITTING PLASTIC COVER AND BOTTOM INTO MULTILAYERED BODY CONTAINER FOR PACKAGE			
(57) Abstract <p>The processes were developed aiming to obtain a container designed to pack several kinds of products and, in particular, food products, such as chocolate, powdered milk, flower products, edible oils, olive oils, and also to be employed in the package of chemical products, paints, lubricating oils, greases, and others, and which may have a metal or multi-layered body having the cover and bottom thereof manufactured of plastic material and produced by an injection process thereby resulting a compound container that will require industrial steps considerably reduced further to eliminate completely the waste of material, since the plastic allows recycling parts eventually produced with any imperfection; and the fitting of the plastic cover and bottom into a metal body container for package will be obtained by means of manufacturing a flap or engagement formed in the upper and lower edges of the metal body container for package and which is formed in an arc having a curvature substantially lower than those usually employed in conventional metal body containers for packages whereas the fitting of plastic cover and bottom into a multi-layered body container for package will be made by means of contact thermo-welding the process through rotation of the multi-layered tube in relation to central vertical axis thereof and using a heated roller that will form the penetration channel.</p>			

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**PROCESS FOR MAKING CONTAINER FOR PACKAGE AND  
CONTAINER FOR PACKAGE OBTAINED THEREFROM,  
PROCESS FOR FITTING PLASTIC COVER AND BOTTOM INTO  
METAL BODY CONTAINER FOR PACKAGE AND PROCESS  
5 FOR FITTING PLASTIC COVER AND BOTTOM INTO MULTI-  
LAYERED BODY CONTAINER FOR PACKAGE**

The present specification refers to a  
**PROCESS FOR MAKING CONTAINER FOR PACKAGE AND  
CONTAINER FOR PACKAGE OBTAINED THEREFROM,**  
10 **PROCESS FOR FITTING PLASTIC COVER AND BOTTOM INTO  
METAL BODY CONTAINER FOR PACKAGE AND PROCESS  
FOR FITTING PLASTIC COVER AND BOTTOM INTO MULTI-  
LAYERED BODY CONTAINER FOR PACKAGE**, which have been  
developed aiming to obtain a container incorporating compound  
15 materials in the manufacture thereof and that will be designed to  
package several kinds of products, in particular, food products such  
as for instance chocolate products, powdered milk, flower products,  
edible oils, olive oils, also being possible to use it for package of  
chemical products, paints, lubricating oils, greases and the like.

20 As it is known, almost all the packages that  
are used as containers for the above-mentioned products are mainly  
produced from metallic materials, preferably tin plate, and are  
obtained from manufacturing processes involving a great number of  
process steps with substantial consumption of raw material and an  
25 excessive demand of workmanship further to producing an  
increased index of waste; however, in spite of the technologic efforts  
that have been made by the manufacturers of the sector to attempt

to reduce the incidence of this inconvenient they have not reached the desired results.

A first object of the invention refers to the

**PROCESS FOR MAKING CONTAINER FOR PACKAGE AND**

5 **CONTAINER FOR PACKAGE OBTAINED THEREFROM**, that will allow manufacturing of a metal body container, which may be manufactured in tin sheet, chromium plated sheet, black sheet or the like, and both the cover and the bottom are made of plastic, and that will be obtained by injection processes thus resulting in a compound 10 container that will require substantially reduced industrial steps, further to completely eliminating the waste of material, since the plastic allows recycling the parts eventually produced with any imperfection.

Another object of the invention refers to the

15 **PROCESS FOR FITTING PLASTIC COVER AND BOTTOM INTO METAL BODY CONTAINER FOR PACKAGE**, which as a function of the constructive characteristics of the plastic cover and bottom obtained from the injection process makes it possible the fitting thereof in the metal body container for package by means of the 20 manufacture of a flap, or engagement, that is formed in the upper and lower edges of the metal body container for package, and the formation of this flap may be effected with an arc of curvature lower than that usually employed in the metal body containers for package using "Penny lever" or "Peel off" types covers and metal bottoms 25 thus contributing to a substantial reduction in the height required for manufacturing the metal body container for package and therefore decreasing the consumption of raw material.

Another object of the invention refers to the **PROCESS FOR FITTING PLASTIC COVER AND BOTTOM INTO MULTI-LAYERED BODY CONTAINER FOR PACKAGE**, which as a function of the constructive characteristics of the plastic cover and

5 bottom obtained from the injection process makes it possible the fitting thereof in multi-layered body container for package of the "fibralata" type by means of contact thermo-welding process, wherein the fitting of the plastic cover and bottom into a multi-layered tube is obtained through the rotation of the multi-layered

10 tube in relation to the central vertical axis thereof, while a heated roller forms the penetration channel in a manner different from the methods employed in multi-layered body container for package using "Penny lever" or "Peel off" type covers and metal bottoms in which these fittings are made by means of redriving process, which

15 for the execution thereof requires a greater height for the multi-layered body the present process thus contributing to a substantial reduction in the consumption of raw material.

For a better understanding of the **PROCESS FOR MAKING CONTAINER FOR PACKAGE AND**

20 **CONTAINER FOR PACKAGE OBTAINED THEREFROM, PROCESS FOR FITTING PLASTIC COVER AND BOTTOM INTO METAL BODY CONTAINER FOR PACKAGE AND PROCESS FOR FITTING PLASTIC COVER AND BOTTOM INTO MULTI-LAYERED BODY CONTAINER FOR PACKAGE**, reference is

25 made to the attached drawings in which:

Fig. 1 - Schematic view of the assembling  
of "Penny lever" type covers

(state of the art);

Fig. 2 - Schematic view of the assembling of "Peel off" type covers (state of the art);

5 Fig. 3 - Side view of the container for package obtained by the proposed process;

Fig. 4 - Exploded side view of the container for package obtained by the proposed process;

10 Fig. 5 - Enlarged view of detail A of figure 4;

Fig. 6 - Enlarged view of detail B of figure 4;

15 Fig. 7 - Enlarged view of detail C of figure 4;

Fig. 8 - Upper view of the plastic cover obtained by the proposed process;

20 Fig. 9 - Sectional view in direction A-A of figure 8;

Fig. 10 - Side view of the container for package obtained by the proposed process showing the driving process through the penetration system of forming rollers;

25 Fig. 11 - Enlarged detail view of detail D of figure 10;

Fig. 12 - Upper view of a variation of the plastic cover of the container for package obtained from the proposed process;

5

Fig. 13 - Sectional view in direction B-B of figure 12;

Fig. 14 - Sectional view in direction C-C of figure 12 showing the pouring nozzle in retracted position;

10

Fig. 15 - Sectional view in direction C-C of figure 12 showing the pouring nozzle in extended position;

15

Fig. 16 - Sectional view in direction C-C of figure 12 showing the pouring nozzle in extended position and uncovered.

20

Fig. 17 - Detailed enlarged view of the flap produced in the upper and lower edges of the metal body container for package for fitting "Penny lever" or "Peel off" type covers and the metal bottoms (state of the art);

25

Fig. 18 - Detailed enlarged view of the flap that is produced in the upper and lower edges of the metal body container for package for fitting the

plastic cover and bottom according to the proposed process;

5 Fig. 19 - Schematic view of the assembling of "Penny lever" type cover into the metal body container for package (state of the art);

10 Fig. 20 - Schematic view of the assembling of "Peel off" type cover into the metal body container for package (state of the art);

15 Fig. 21 - Schematic view of the assembling of plastic cover and bottom into the metal body container for package according to the proposed process;

Fig. 22 - Schematic view of the assembling of "Peel off" type cover and metal bottom in the multi-layered body container for package (state of the art);

20 Fig. 23 - Schematic view of the assembling of plastic cover and bottom into the multi-layered body container for package according to proposed process.

25 The packages presently known in the market basically employ "Penny lever" type covers that are comprised of a metal cover (1) and a metal rim (2) and a sealing (3)

comprised of an aluminum membrane, and "Peel off" type covers that are comprised of a metal rim (4) having seal (5) also comprised of an aluminum membrane and an overlapped plastic one (6).

"Penny lever" type covers are made by

- 5 cutting into sheets the plate supplied in coils, and these sheets will then be lithographed and enameled and later cut into strips to enter the press line for the production of the cover itself, wherein they suffer the first operation, i.e. stamping, and then it is produced in the curling machine the peripheral ring, and these same steps will also
- 10 be employed in the production of the metal rim, and in this case there will be a third operation, that is the cutting, wherein the central core thereof will be removed and disposed, and later the "Penny lever" cover assembly is mounted in an equipment called composer machine wherein two magazines are provided, one to supply metal
- 15 covers and the other to supply metal rims, and in one station the metal cover is fitted into the metal rim, and in the other station it is installed an aluminum coil that is uncoiled and cut into discs that will be pressed into the cover-rim assembly forming the seal of the "Penny lever" cover.

- 20 In "Peel off" type covers, the metal rim is obtained from a bottom of conventional can; that is, after cutting the coil into sheets these are then cut into strips to enter the press line to manufacture the bottom wherein the first operation is performed, that is stamping, then it is curled and the sealing material is applied,
- 25 and after drying thereof it is directed to a machine specifically designed for that purpose in which the bottom is placed in a magazine wherein in a first station the central core thereof is cut and

disposed of, and then the cutting edges are flanged downwards, being further provided an aluminum coil that is uncoiled and cut into discs having a grip tab that is fitted to the metal rim by the contact thermo-welding process thus forming the seal, and the "Peel off"

5 type cover is further accompanied of a plastic overlapped cover, and this does not offer a tight sealing of the container due to the low height of the ring of the rim ending to compromise the properties of the product contained therein.

It should be further emphasized that due to  
10 the increased number of steps involved in the manufacture of the covers both "Penny lever" type and "Peel off" type the waste index is substantially high as well as the demand for workmanship.

In conformity with the **PROCESS FOR MAKING CONTAINER FOR PACKAGE AND CONTAINER FOR PACKAGE OBTAINED THEREFROM**, the container for package is formed by a metal body (7), made of tin sheet, chromium plated sheet, black sheet or the like, wherein it is applied by driving a cover (8) and a bottom (9), both made of plastic material, which will be obtained by injection process, and both the cover and the bottom  
15 are made with a thickness sufficient to produce a safe fitting to the body of the container, and are provided with surrounding channel (10), arranged in the periphery thereof, which will allow to be applied to the edges of the metal body by the driving process upon penetration of forming rollers (11) keeping them rigidly placed such  
20 as to provide perfect stability and tightness to the container with the aid of the plasticity of the material of the cover and the bottom, and said cover may be injected foreseeing the formation of membrane  
25

(12) that comprises the seal, also forming a line of low resistance  
(13) such that it can be detached, further to formation of grip handle  
(14) that will help such detachment, said cover may further  
incorporate a seal that may be produced of aluminum, aluminized  
5 paper, plastic paper or the like, and the fitting of these kinds of seal  
to the cover may be made by contact thermo-welding process, being  
further provided an overlapped cover (15) also made of plastic  
material and that will guarantee the closure of the container after  
opening said cover, and which will be internally provided with a  
10 semicircular rib (16) that will engage the channel formed from the  
driving of the body of said container into the peripheral edge of said  
cover, such as to guarantee complete tightness of the container in a  
manner to assure that the properties of the product contained  
therein will not suffer any alteration.

15 The container for package may further  
have as a constructive variation for said plastic cover the inclusion of  
an extender nozzle (17) of the kind formed by a flexible telescopic  
cannula which will be kept embedded when out of use, and that will  
be provided with sealing plug (18) and this said cover will be  
20 designed to containers that will contain liquid products.

When employing the **PROCESS FOR**  
**MAKING CONTAINER FOR PACKAGE AND CONTAINER FOR**  
**PACKAGE OBTAINED THEREFROM** it will be possible to reduce  
the raw material in the order of 50% further to reducing substantially  
25 the process steps involved in the manufacture thereof, since with the  
injection process the rim is already produced without the core  
thereof, there not being the necessity to dispose the material

comprising it, therefore not requiring the cutting operation as it occurs with rims that are produced of metallic material; and when employing plastic it will only be necessary to flange it after injection thereof, the demand for workmanship being substantially reduced

5 and therefore reducing to zero the waste because if there is the production of a defective part this may be recycled and injected again, this alternative is not found in products produced from metallic materials.

#### The PROCESS FOR FITTING PLASTIC

10 **COVER AND BOTTOM INTO METAL BODY CONTAINER FOR PACKAGE** employs a metal body container for package that is produced by cutting a metal coil into sheets and then these sheets enter a line of double cut wherein the bodies of the containers are cut, then following to the assembling line wherein with the aid of a

15 forming electrowelder the body of the container itself is formed and electrically welded, and this further receives reinforcement moldings that are produced in a molding machine further passing through a flap machine wherein the flaps or engagements are formed in the upper and lower edges thereof which will receive, and where will be

20 fitted the plastic cover and bottom, respectively, and due to the constructive characteristics of the plastic cover and bottom these flaps may be produced having an arc of curvature with a reduction of about 85% in relation to those employed in conventional containers for package employing "Penny lever" and "Peel off" type covers

25 and metal bottoms, and the fitting of the plastic cover and bottom to the metal body container for package is made with the aid of a race, or roller, having a profile compatible with the peripheral channel

existing on the plastic cover and bottom, and the container for package will rotate in relation to the central vertical axis thereof such as to allow the race, or roller, to form the driving fold which with the aid of the plasticity of the material of cover and bottom will be 5 sufficient to provide a perfect stability and tightness to the container for package.

**10 The PROCESS FOR FITTING PLASTIC COVER AND BOTTOM INTO MULTI-LAYERED BODY CONTAINER FOR PACKAGE** employs a multi-layered body container for package that is produced from a multi-layered tube, and the fitting of the plastic cover and bottom to the multi-layered container for package is obtained by the process of contact thermo-welding and it is made with the aid of a heated roller having a profile compatible with the peripheral channel existing in the plastic cover 15 and bottom, and the container for package will rotate in relation to the central vertical axis thereof in order to allow the heated roller to form the driving fold which with the aid of the plasticity of the material of the cover and bottom will be sufficient to provide perfect stability and tightness of the container for package.

20 This driving may also be obtained by the process of contact thermo-welding with the aid of a heated race having a profile compatible with the peripheral channel existing in the plastic cover and bottom, and the container for package will rotate in relation to the central vertical axis thereof and around the 25 race in a manner to allow the heated race to form the driving fold of the plastic cover and bottom in the multi-layered container for package.

## CLAIMS

1. PROCESS FOR MAKING  
CONTAINER FOR PACKAGE AND CONTAINER FOR PACKAGE  
OBTAINED THEREFROM, PROCESS FOR FITTING PLASTIC  
5 COVER AND BOTTOM INTO METAL BODY CONTAINER FOR  
PACKAGE AND PROCESS FOR FITTING PLASTIC COVER AND  
BOTTOM INTO MULTI-LAYERED BODY CONTAINER FOR  
PACKAGE, characterized in that the process for making the  
container for package is performed starting from a metal body (7) in  
10 which a cover (8) and a bottom (9), both made of plastic material,  
are driven and that are obtained by injection process, both the cover  
and the bottom are applied to the edges of the metal body by the  
driving process upon penetration of forming rollers (11), keeping  
them rigidly placed such as to provide perfect stability and tightness  
15 to the container with the aid of the plasticity of the material of cover  
and bottom, and said cover may be injected foreseeing the  
formation of membrane (12) that comprises the seal, and also being  
formed a line of low resistance (13) in order that this may be  
detached, further to the formation of grip handle (14) that will help to  
20 detach it, also being possible to incorporate a seal that may be  
produced of aluminum, aluminized paper, plastic paper or the like,  
and the fitting of these kinds of seals to the cover may be made by  
contact thermo-welding process, also being provided an overlapped  
cover (15) also made by injection of plastic material, and said cover  
25 may also be injected with the insertion of an extender nozzle (17) of  
the kind formed by a flexible telescope cannula that will be provided  
with sealing plug (18).

2. PROCESS FOR MAKING  
CONTAINER FOR PACKAGE AND CONTAINER FOR PACKAGE  
OBTAINED THEREFROM, PROCESS FOR FITTING PLASTIC  
COVER AND BOTTOM INTO METAL BODY CONTAINER FOR  
5 PACKAGE AND PROCESS FOR FITTING PLASTIC COVER AND  
BOTTOM INTO MULTI-LAYERED BODY CONTAINER FOR  
PACKAGE, characterized in that the container for package  
obtained is formed by a metal body (7) in which a cover (8) and a  
bottom (9), both made of plastic material, having sufficient thickness  
10 such as to produce a safe fitting to the body of container and that  
are provided with surrounding channel (10) arranged in the  
periphery thereof which will make it possible to be applied to the  
edges of the metal body such as to provide perfect stability and  
tightness to the container with the aid of the plasticity of the material  
15 of cover and bottom, and said cover may also foresee a membrane  
(12) that comprises the seal provided with a low-resistance line (13),  
such that it can be detached further to the grip handle (14) that will  
this detachment, also being possible to incorporate a seal that may  
be produced of aluminum, plastic paper or the like, and the fitting of  
20 this kind of seal to the cover may be made by contact thermo-  
welding process, also being provided an overlapped cover (15) also  
made of plastic material, and that will guarantee the closure of the  
container after opening said cover, and which is provided internally  
with semicircular rib (16), that will engage into the channel formed in  
25 the body of said container such to guarantee complete tightness of  
the container.

3. PROCESS FOR MAKING

CONTAINER FOR PACKAGE AND CONTAINER FOR PACKAGE  
OBTAINED THEREFROM, PROCESS FOR FITTING PLASTIC  
COVER AND BOTTOM INTO METAL BODY CONTAINER FOR  
PACKAGE AND PROCESS FOR FITTING PLASTIC COVER AND

5      BOTTOM INTO MULTI-LAYERED BODY CONTAINER FOR  
PACKAGE, according to claim 2, characterized in that the  
container for package obtained may further have as a constructive  
variation for said plastic cover the inclusion of an extender nozzle  
(17) of the kind formed by a flexible telescope cannula which will be  
10     kept embedded when out of use and will be provided with sealing  
plug (18).

4. PROCESS        FOR        MAKING  
CONTAINER FOR PACKAGE AND CONTAINER FOR PACKAGE  
OBTAINED THEREFROM, PROCESS FOR FITTING PLASTIC  
15     COVER AND BOTTOM INTO METAL BODY CONTAINER FOR  
PACKAGE AND PROCESS FOR FITTING PLASTIC COVER AND  
BOTTOM INTO MULTI-LAYERED BODY CONTAINER FOR  
PACKAGE, employing a metal body container for package that is  
produced starting from the cut of a metal coil into sheets, and  
20     thereafter these sheets enter into a line of double cut wherein the  
bodies of the containers are cut and then follow to the assembling  
line wherein the container body itself is formed and electrically  
welded with the aid of an electrowelding forming machine, and it  
further receives reinforcing moldings that are produced in a molding  
25     machine, characterized in that in the process of fitting the plastic  
cover and bottom into the metal body container for package the  
metal body container for package further passes into flap machine

wherein the flaps or engagements are formed in the upper and lower edges thereof, which will receive, and where it will be fitted the plastic cover and bottom, respectively, and due to the constructive characteristics of the plastic cover and bottom these flaps may be

5 produced having an arc of curvature with a reduction of about 85% in relation to those employed in conventional containers for package, and the fitting of the plastic cover and bottom to the metal body container for package is made with the aid of a race, or roller, having a profile compatible with the peripheral channel existing on

10 the plastic cover and bottom, and the container for package will rotate in relation to the central vertical axis thereof such as to allow the race, or roller, to form the driving fold which with the aid of the plasticity of the material of cover and bottom will be sufficient to provide a perfect stability and tightness to the container for package.

15

#### 5. PROCESS FOR MAKING

CONTAINER FOR PACKAGE AND CONTAINER FOR PACKAGE  
OBTAINED THEREFROM, PROCESS FOR FITTING PLASTIC  
COVER AND BOTTOM INTO METAL BODY CONTAINER FOR  
PACKAGE AND PROCESS FOR FITTING PLASTIC COVER AND  
20 BOTTOM INTO MULTI-LAYERED BODY CONTAINER FOR  
PACKAGE, employing a multi-layered body container for package  
produced from a multi-layered tube, characterized in that in the  
process of fitting the plastic cover and bottom into the multi-layered  
body container for package is obtained by the process of contact  
25 thermo-welding with the aid of a heated roller having a profile  
compatible with the peripheral channel existing on the plastic cover  
and bottom, and the container for package will rotate in relation to

the central vertical axis thereof such as to allow the heated roller to form the driving fold which with the aid of the plasticity of the material of cover and bottom will be sufficient to provide a perfect stability and tightness to the container for package.

5                   6. PROCESS       FOR       MAKING  
CONTAINER FOR PACKAGE AND CONTAINER FOR PACKAGE  
OBTAINED THEREFROM, PROCESS FOR FITTING PLASTIC  
COVER AND BOTTOM INTO METAL BODY CONTAINER FOR  
PACKAGE AND PROCESS FOR FITTING PLASTIC COVER AND  
10                BOTTOM INTO MULTI-LAYERED BODY CONTAINER FOR  
PACKAGE, according to claim 5, characterized in that this driving  
can further be obtained by the process of contact thermo-welding  
with the aid of a heated race having a profile compatible with the  
peripheral channel existing on the plastic cover and bottom, and the  
15                container for package will rotate in relation to the central vertical axis  
thereof and around the race, such as to allow the heated race to  
form the driving fold of the plastic cover and bottom in the multi-  
layered body container for package.

**PROCESS FOR MAKING CONTAINER  
FOR PACKAGE AND CONTAINER FOR PACKAGE OBTAINED  
THEREFROM, PROCESS FOR FITTING PLASTIC COVER AND  
BOTTOM INTO METAL BODY CONTAINER FOR PACKAGE AND**

**5 PROCESS FOR FITTING PLASTIC COVER AND BOTTOM INTO  
MULTI-LAYERED BODY CONTAINER FOR PACKAGE**

The processes were developed aiming to obtain a container designed to pack several kinds of products and, in particular, food products such as chocolate, powdered milk, flower products, edible oils, olive oils, and also to be employed in the package of chemical products, paints, lubricating oils, greases, and others, and which may have a metal or multi-layered body having the cover and bottom thereof manufactured of plastic material and produced by an injection process thereby resulting a compound container that will require industrial steps considerably reduced further to eliminating completely the waste of material, since the plastic allows recycling parts eventually produced with any imperfection; and the fitting of the plastic cover and bottom into a metal body container for package will be obtained by means of manufacturing a flap or engagement formed in the upper and lower edges of the metal body container for package and which is formed in an arc having a curvature substantially lower than those usually employed in conventional metal body containers for packages whereas the fitting of plastic cover and bottom into a multi-layered body container for package will be made by means of contact thermo-welding process through rotation of the multi-layered tube in relation to central vertical axis thereof and using a heated roller that

will form the penetration channel.

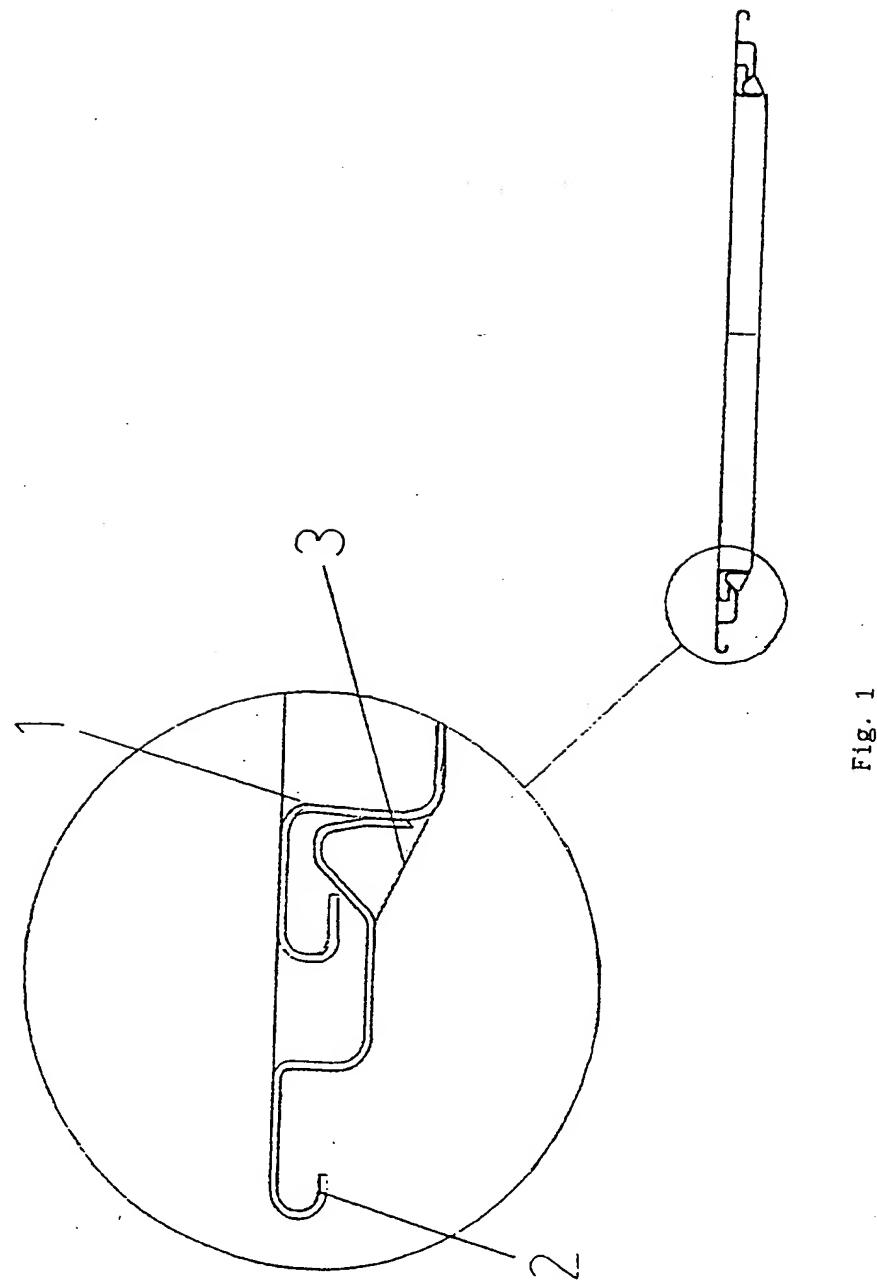


Fig. 1

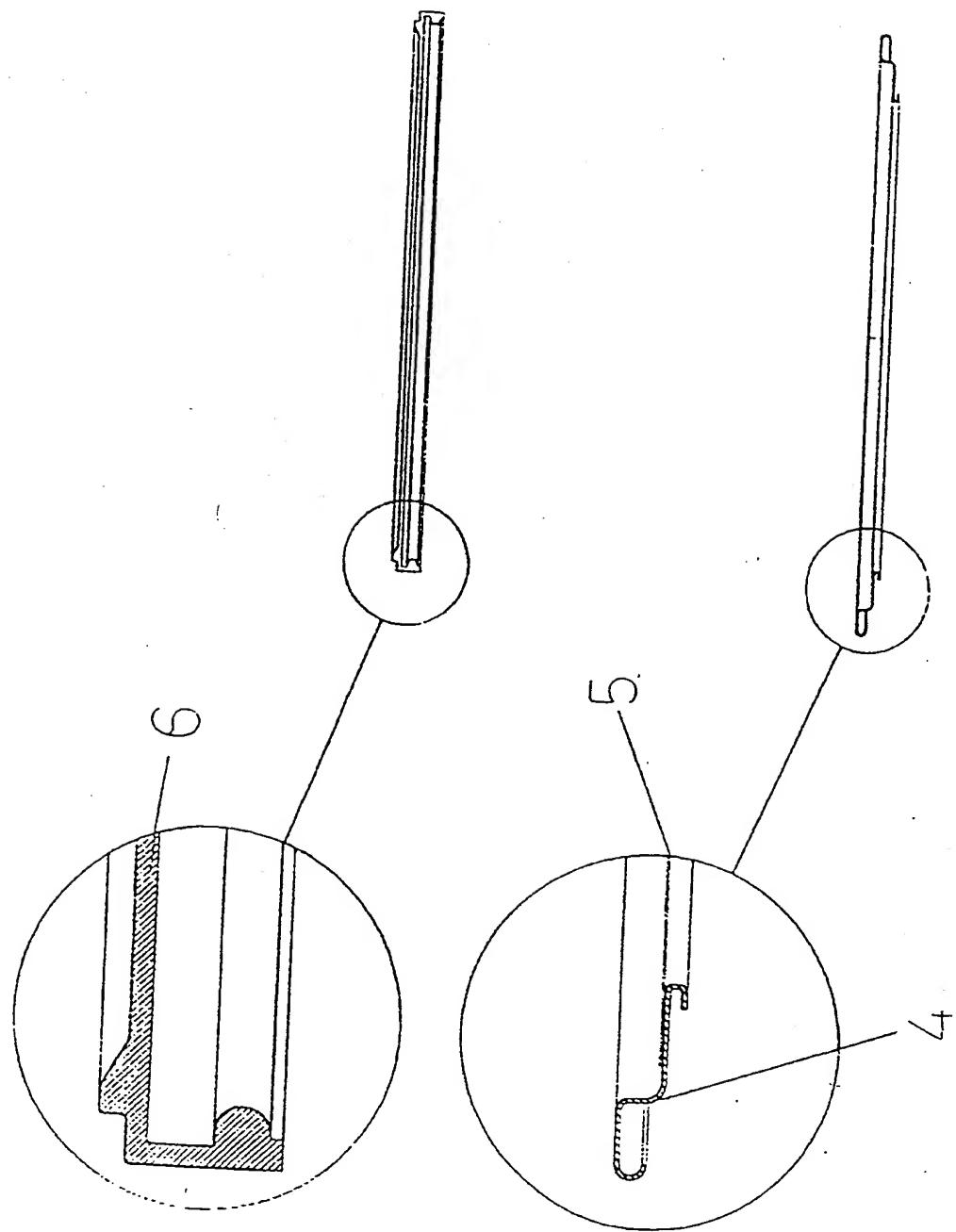


Fig. 2

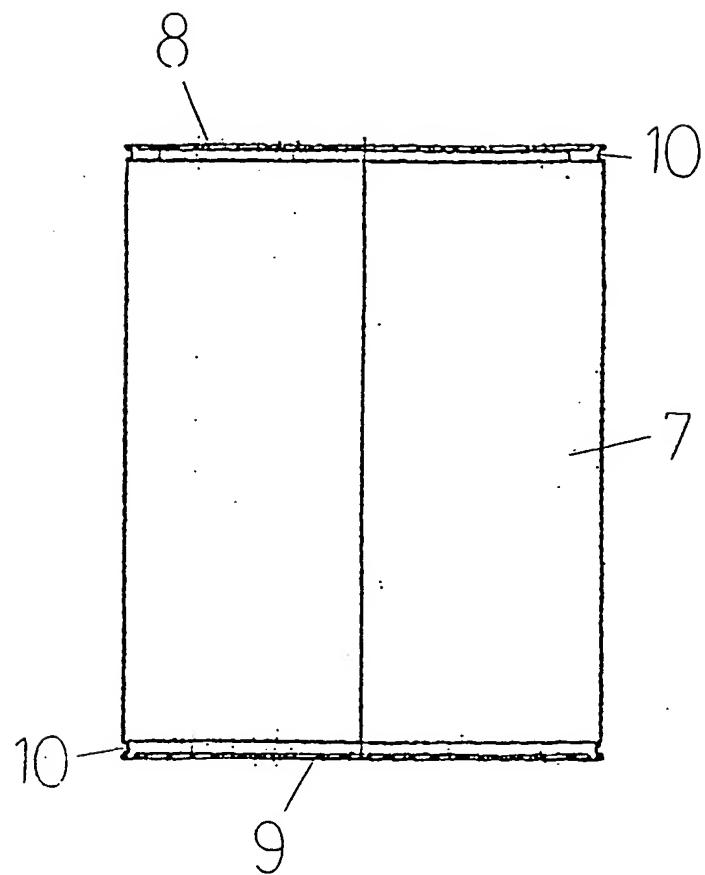


Fig. 3

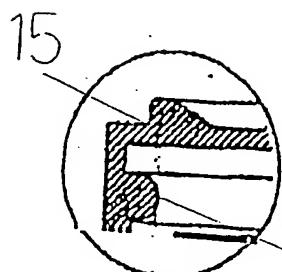
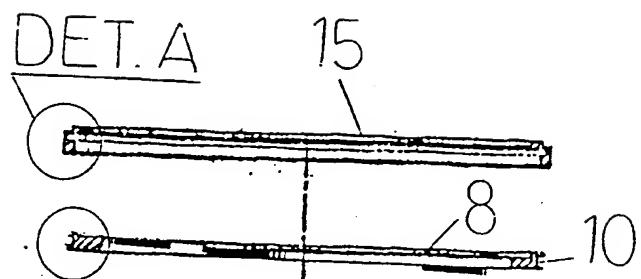


Fig. 5



DET. B

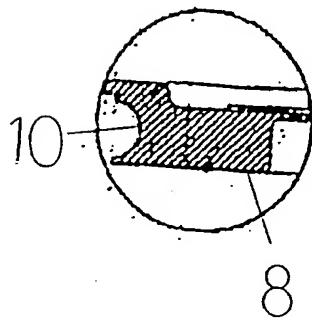


Fig. 6

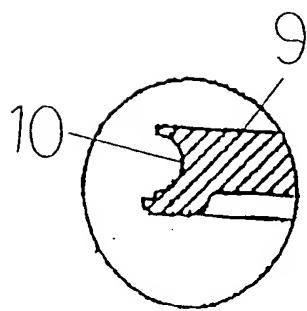


Fig. 7

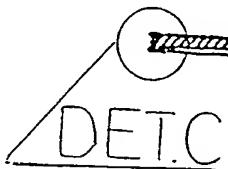
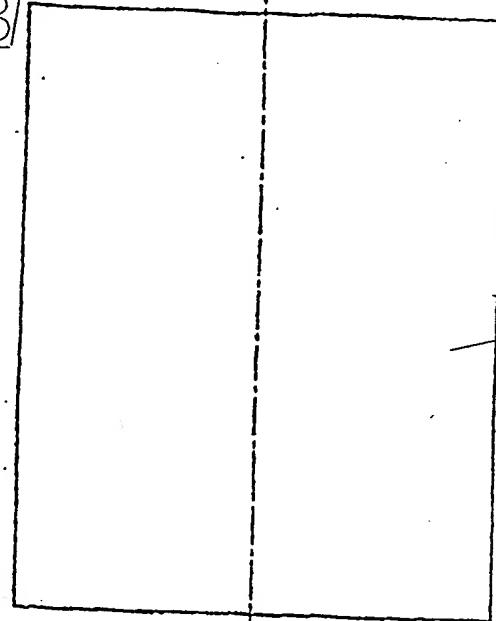


Fig. 4



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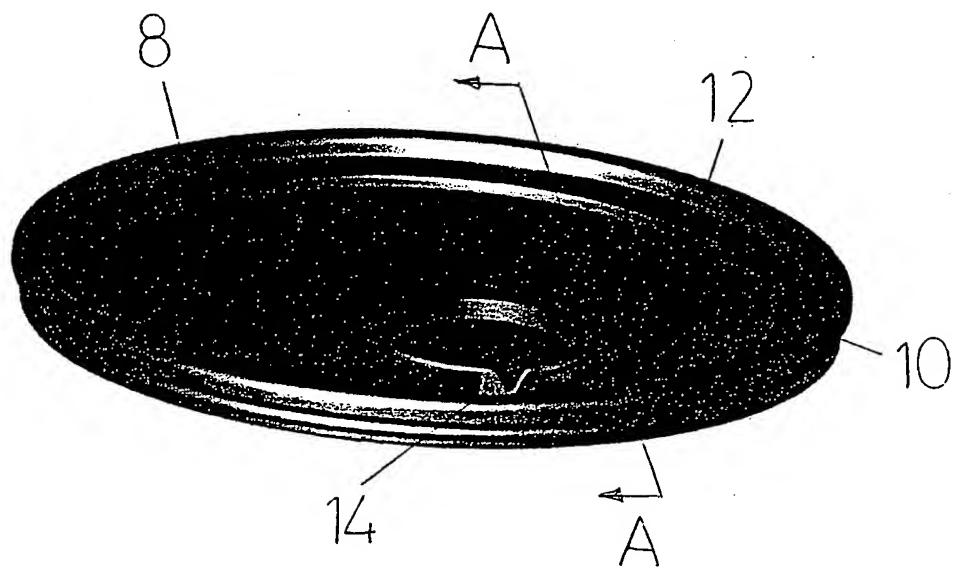


Fig. 8

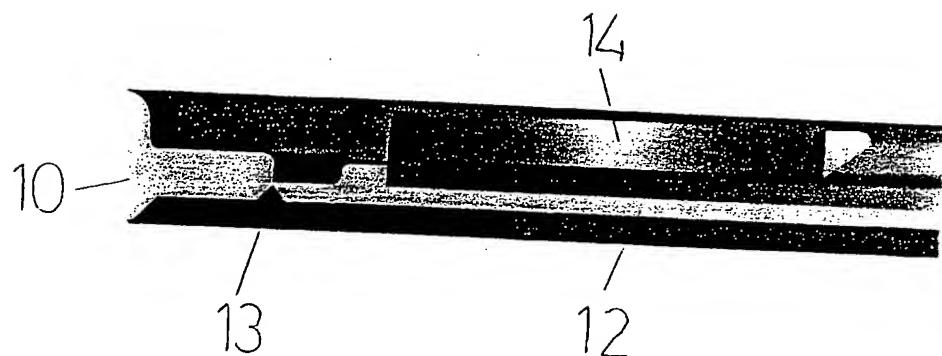
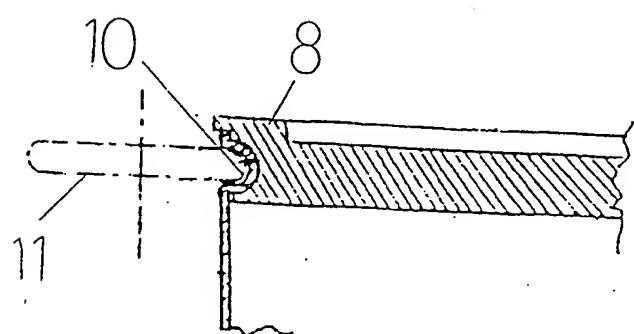
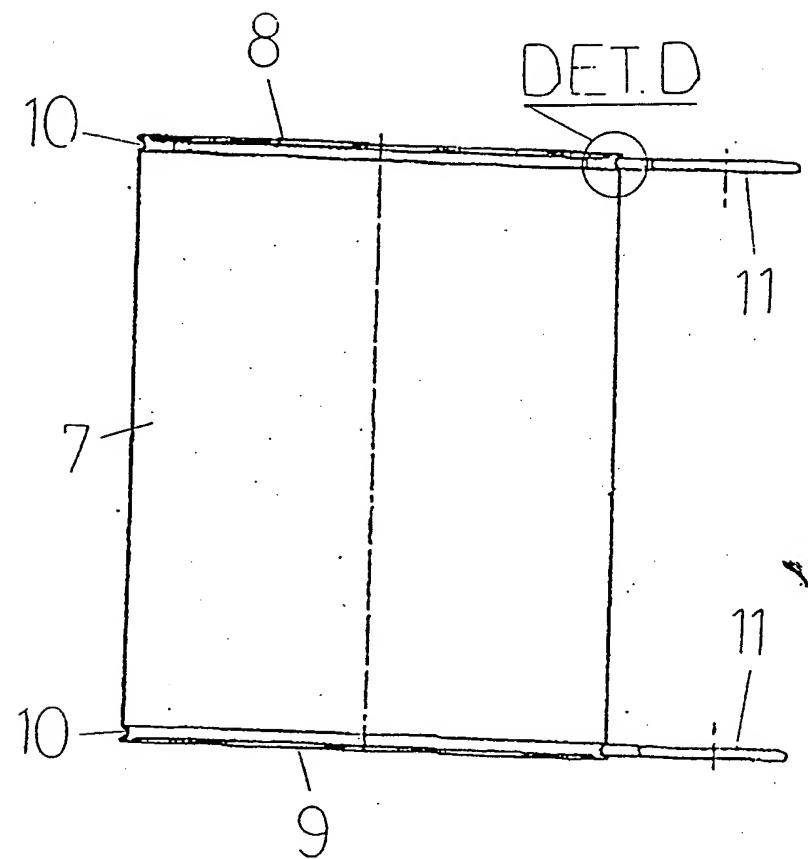


Fig. 9



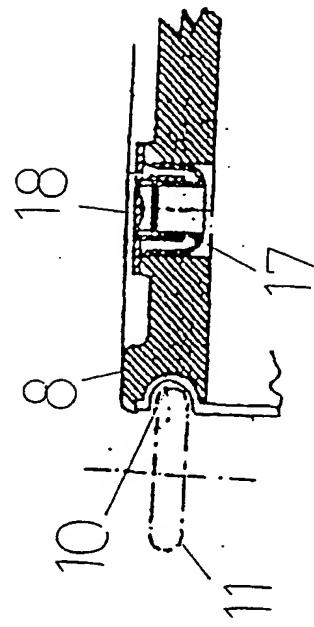


Fig. 13

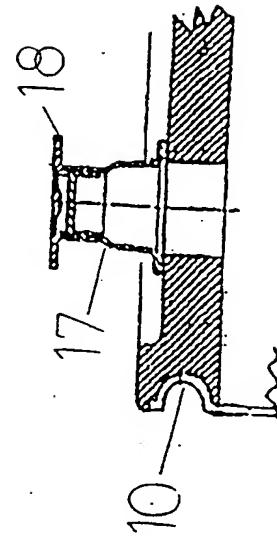


Fig. 14

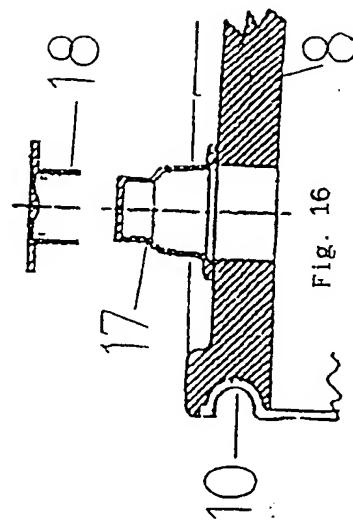


Fig. 15

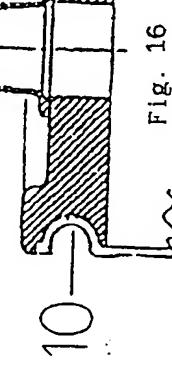


Fig. 16

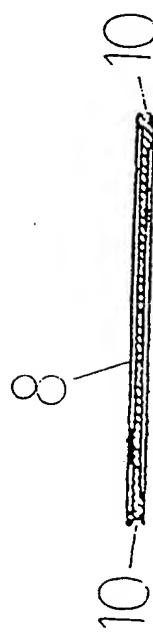


Fig. 12

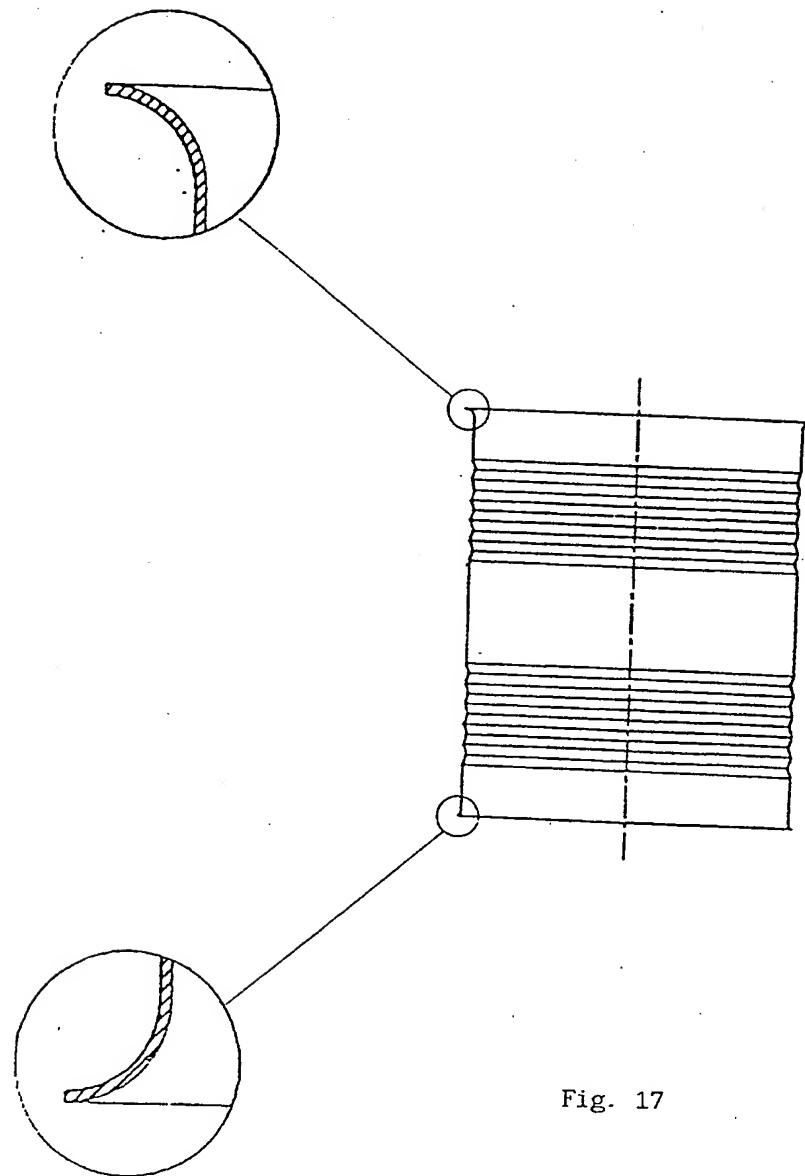


Fig. 17

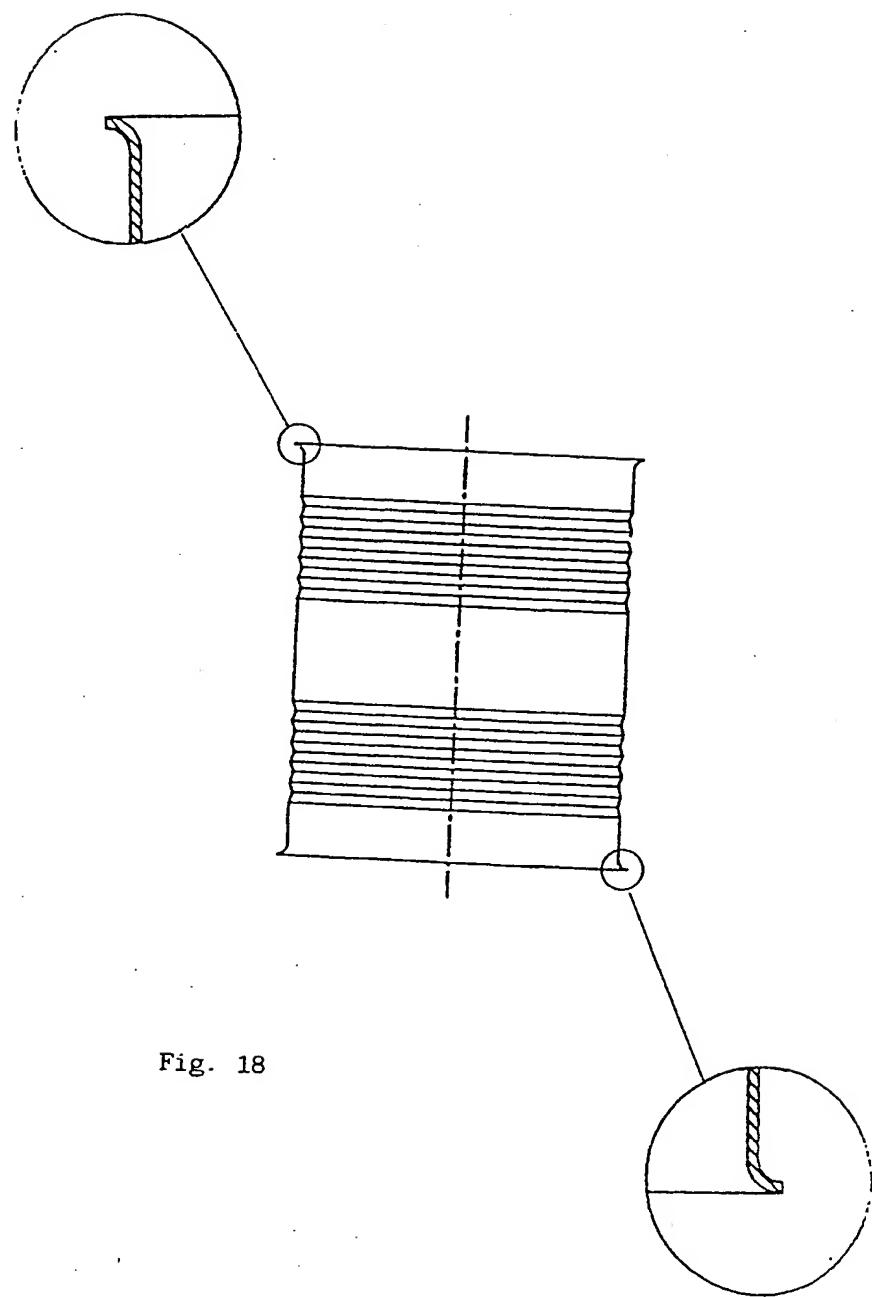


Fig. 18

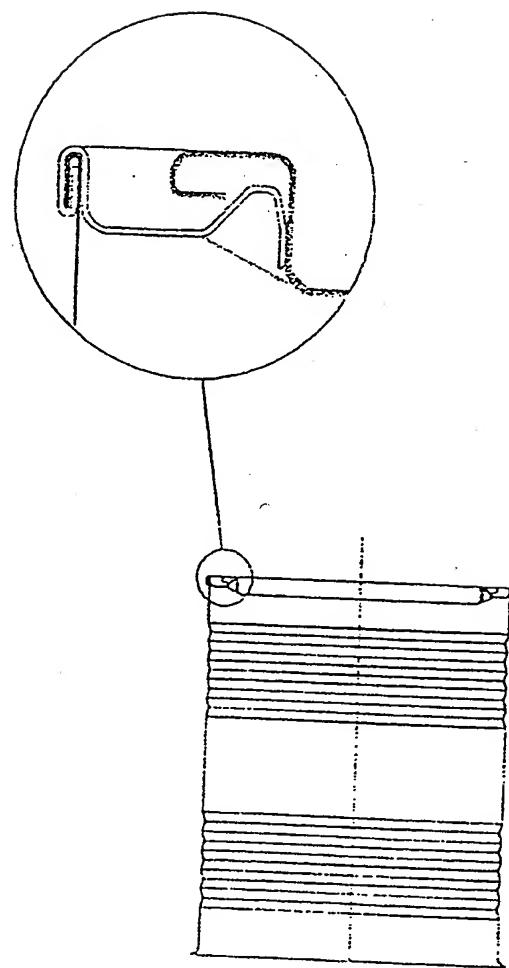


Fig. 19

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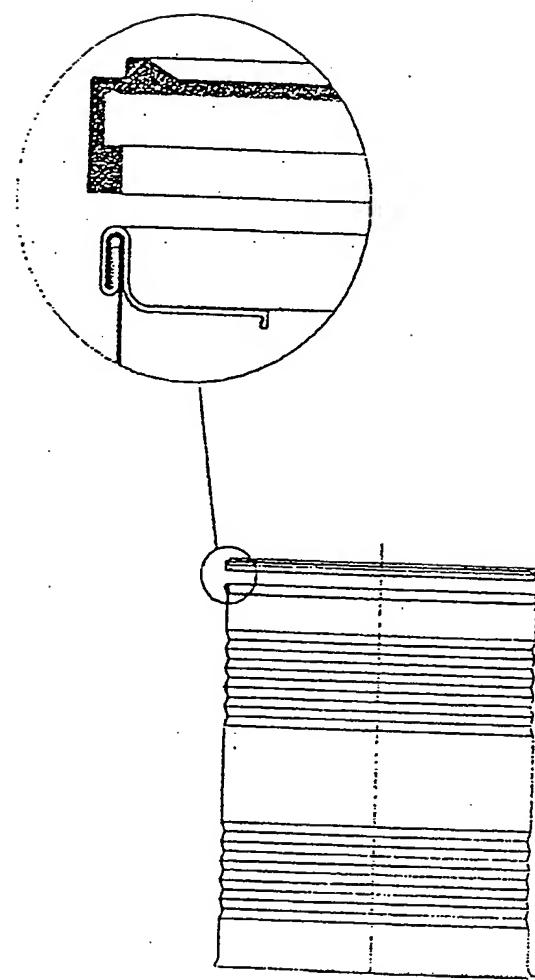


Fig. 20

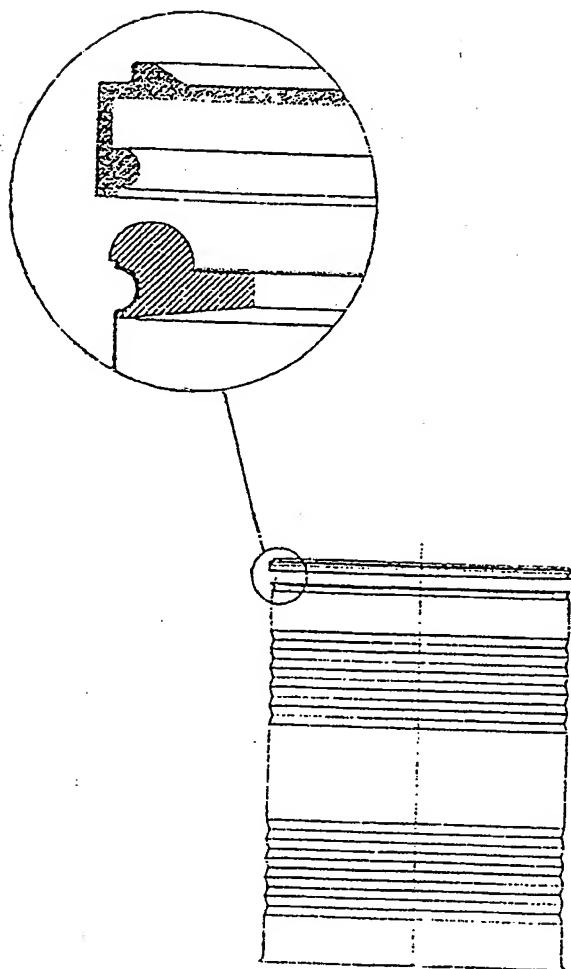


Fig. 21

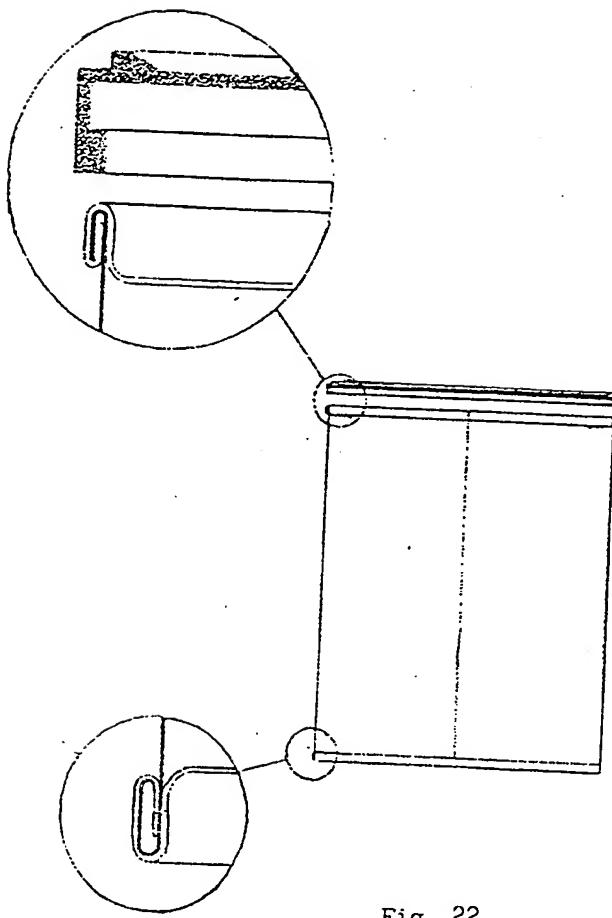


Fig. 22

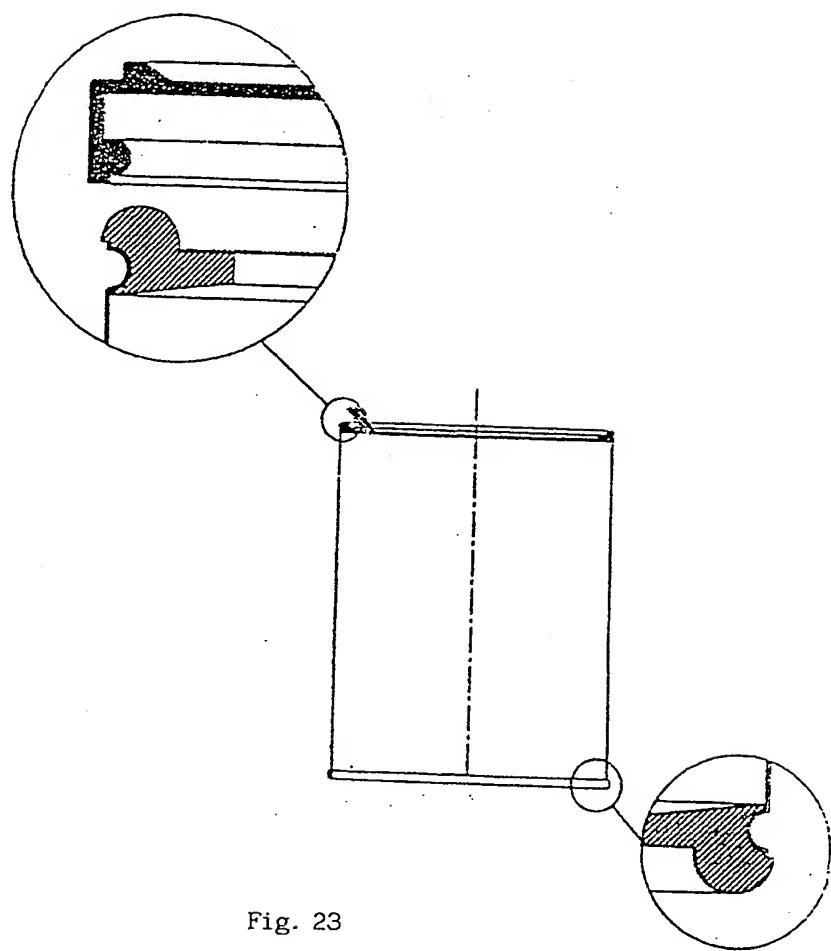


Fig. 23

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